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Bromine and Iodine

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The bromine industry in the United States is carried on principally in Michigan, Pennsylvania, Ohio and West Virginia. It is difficult to give exact figures of the output since the producers give no information in regard to the industry. The principal producers are the Dow Chemical Company in Michigan, and the John A. Beck Salt Company in Pennsylvania. The estimated production for the year 1913 was 794,500 lb., mostly in the form of bromides. The production of liquid bromine was the smallest for many years. No figures of the production are available.

The price of bromine remains about the same as that of 1912. The quantities used for metallurgical and medical purposes, and in the arts was the same as in the previous year. The only field in which the use of bromine is increasing is that of photography. This is due in large measure to the increasing motion picture business.

The following table shows the production of bromine in the United States for the period 1900 to 1913:

PRODUCTION OF BROMINE IN THE UNITED STATES.
(In pounds.)

Year.	Michigan. (a)	Ohio and Penn.	West Virginia.	Total. (a)	Metric Tons.	Value.	
						Total.	Per lb.
1900	210,400	196,774	114,270	521,444	237	$140,790	27
1901	217,995	227,062	106,986	552,043	250	154,572	28
1902	226,452	194,086	93,375	513,913	233	128,742	25
1903	320,000	180,000	97,000	597,000	271	170,145	28½
1904	646,249	147,807	85,256	879,312	399	215,431	24½
1905	579,434	223,000	97,000	899,434	408	139,492	15½
1906	955,000	203,000	71,000	1,229,000	553	184,350	15
1907	(b)	(b)	(b)	1,062,000	482	138,060	13
1908	(b)	(b)	(b)	1,149,000	521	103,410	9
1909	(b)	(b)	(b)	1,100,000	500	110,000	10
1910	641,300	155,000	54,000	850,300	386	110,539	13
1911 (c)	648,000	164,000	89,000	901,000	.....	180,000	20
1912	840,000	177,000	68,000	1,085,000	435	270,000	25
1913	(d)626,500	(d)123,500	(d)44,500	(d)794,500	.....	.....	.....

(a) Includes the bromine equivalent of the bromides produced directly. (b) Not reported separately. (c) From *Eng. and Min. Journ.* (d) Bromides.

Germany and England both export bromine. The supply of bromine in Germany so far exceeds the demand that the Bromine Convention has offered a prize to the discoverer of a process or compound which will lead to a greater consumption of bromine.

Iodine

No iodine is produced in the United States, although a possible source exists in the sea-weeds along the coast. The sea-weeds of California which are treated commercially for potash do not promise a large yield of iodine.

The imports of iodine are given in the following table:

Year.	Crude.		Resublimed.	
	Pounds.	Value.	Pounds.	Value.
1909	12,910	$25,705	51	$110
1910	771,083	1,051,036	7	24
1911	423,353	841,559	55	181
1912	379,311	737,109	40	96
1913	351,256	739,734	40	96

The principal source of supply of iodine is the mother-liquor from the nitre industry of Chile. The production for 1913 amounted to about 436,971 kg. Of the quantity of iodine exported in 1912, 238,904 kg. went to Germany, 154,490 kg. to the United States, and 54,664 kg. to the United Kingdom. Germany is the largest consumer of iodine.

Iodine imported into the United States is used in the production of iodoform, hydroiodate, and potassium iodate. The imports of iodide and hydroiodate for the fiscal years ending June 30, are shown in the table:

	Pounds.	Value.
1909	251	$508
1910	142	275
1911	272	519
1912	238	451
1913	120	239

The sea-weeds of Siberia are very rich in iodine. In 1910 plans for the establishment of a factory for the production of iodine from this source at Olga Bay were made by a Russian firm. The project was dropped when the Russian interests were purchased by a German chemical company which wished to limit competition.

Crude iodine is produced by a number of small producers along the southern coast of Japan. The principal producer is located at Hayama, about 20 miles from Yokohoma. The customs returns for 1912 show that in that year 22,772 lb. of iodine valued at $44,977 were exported to Germany, Hongkong, Great Britain, and Belgium.

During the year 1913 a process for the production of iodine from sea-weed has been perfected by Cameron and Moore (U. S. Pat. 1051984). The partially evaporated extract from the ash is electrolyzed in a diaphragm cell. The anode liquor containing iodic acid is then reduced with sulphuric acid and iron, or ferrous sulphate, thus liberating the iodine.

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